

## University of Anbar جامعة الأنبار



*Bachelor's Degree (B.Sc.) –Mechanical Engineering*  
بكالوريوس - هندسة ميكانيك



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### 1. About The Mechanical Engineering department

The Mechanical Engineering department expands the frontier of human knowledge in the discipline of mechanical engineering through fundamental and applied research conducted by faculty and students. It applies the principles of mechanical engineering to bear on important problems of national and regional, implication: mechanical design, thermal sciences and production. The outcomes for the Mechanical Engineering Program were chosen so that the ME graduates will be prepared to meet the program objectives. Thus, graduates of the Mechanical Engineering Program will have:

1. The ability to apply knowledge of mathematics, science, and engineering to design and conduct experiments, as well as to analyze and interpret data;
2. The ability to identify, formulate, solve engineering problems or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;
3. To understand the impact of engineering solutions in a global, economic, environmental, and societal context.
4. The ability to communicate effectively and engage in life-long learning.
5. The ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

### 2. Vision Statement

The Department of Mechanical Engineering endeavours to be one of the leading Mechanical Engineering Programs in Iraq and the Arab world.

### 3. **Mission Statement**

The Department of Mechanical Engineering's mission is to educate, prepare, encourage, and advise students in order for them to excel as professionals and to provide graduates with advanced knowledge and skills as well as high quality engineering education.

### 4. **Program Specification**

<b>Program code:</b>	B.Sc. -MEC	<b>ECTS</b>	240
<b>Duration:</b>	4 levels, 8 Semesters	<b>Method of Attendance:</b>	Full Time

### 5. **Goals**

The Mechanical Engineering program is providing graduates with solid practical and professional knowledge to excel in this field of engineering. Within a few years after graduating, our students will:

1. To provide a high quality of mechanical engineering education via outstanding teaching, innovative curriculum, and career-relevant training programs.
2. To encourage and promote execution innovative research and find solutions for the complex problems related to mechanical engineering.
3. To prepare mechanical engineers adhered to the professional ethics, applicable laws and the accepted standards to prevent corruption and deviation.
4. To promote the quality of education and scientific research for the members (academic staff and employees) of the department.
5. To offer mechanical engineering consulting services that satisfy a community's and an institution's requirements.

## 6. Student Learning Outcomes (SLOs)

### *SLO-1: Technological Skills*

The graduate makes appropriate use of technologies to communicate, collaborate, solve problems, make decisions, and conduct research, as well as foster creativity and life-long learning. The graduate is able to use state-of-the-art technological resources and tools and keeps up on advancements in her or her field of study and/or practice.

### *SLO-2: Problem Solving Abilities*

The graduate is able to creatively solve problems from both analytic and applied perspectives using multiple approaches, integrating sciences, engineering, and the humanities. The graduate is able to recognize, incorporate and adapt to the limitations and consequences of applying various problem solutions.

### *SLO-3: Innovation and Design*

The graduate often makes discussions and observations that lead to new ideas or hypotheses. He or she formulate novel solutions while moving beyond the conventional to new methods blending creative and practical approaches, constructions and designs which may involve pioneering applications along the interface of engineering and modern technology. The graduate has the ability to create highly sophisticated designs and implement them which are considered state-of-the practice in his or her field.

### *SLO-4: Research Abilities*

The graduate is able to collect and process data, information and knowledge to answer specific questions or generate new conceptual models and hypotheses. The graduate evaluates these models and hypotheses using the appropriate experimental, mathematical, and statistical approaches.

### *SLO-5: Leadership*

The graduate is able to articulate a vision or goal in such a manner as to promote collaboration and successful implementation. The graduate displays a willingness to overcome adversity and work diligently in pursuit of goals, thus serving as a role model for others.

### *SLO-6: Communication*

The graduate employs an understanding of audience, purpose, and context to communicate effectively in a range of situations using appropriate media while displaying a significant aptitude for presenting scientific and technical materials to diverse audiences.

### *SLO-7: Human Resources and Interactions*

The graduate is able to work either independently or in diverse groups to effectively and efficiently to respond to academic and work requirements.

### *SLO-8: Engagement*

The graduate uses his or her knowledge and skills, including those associated with engineering and applied science, to make a positive difference on issues of public concern.

### *SLO-9: Ethical Reasoning, Behaviour and Professionalism*

The graduate recognizes ethical issues, considers multiple points of view, and uses critical ethical reasoning to determine the appropriate behaviour to follow. The graduate thus demonstrates a high level of integrity and a positive work ethic combined with a thorough understanding of the ethical implications and obligations associated with the practice of all the fields of mechanical engineering.

## **7. Academic Staff**

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## 8. Credits, Grading and GPA

### 7. 1. Credits

Anbar University is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs student workload, including structured and unstructured workload.

### 7. 2. Grading

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

GRADING SCHEME مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 – 100	Outstanding Performance
	B - Very Good	جيد جدا	80 – 89	Above average with some errors
	C - Good	جيد	70 – 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 – 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 – 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب - قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
Number Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

### 7. 3. GPA

*Calculation of the Cumulative Grade Point Average (CGPA):*

1. The CGPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program total ECTS.



CGPA of a 4-year B.Sc. degree:

$$CGPA = [ (1st^{th} \text{ module score} \times ECTS) + (2nd^{th} \text{ module score} \times ECTS) + \dots ] / 240$$

## 8. Curriculum/Modules

### Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Module Code	Module Name in Arabic	Module Name in English	SSWL	USSWL	ECTS	Type	Pre-request
ENG 003	الرياضيات 1	Calculus I	63	87	6	B	
ENG 006	الميكانيك الهندسي 1 (سكوني)	Engineering Mechanics I (Static)	63	87	6	C	
ENG 001	الفيزياء	Physics	78	47	5	B	
MEC 001	أساسيات عمليات التصنيع	Principles of Manufacturing Process	93	57	6	C	
UOA 001	اللغة العربية 1	Arabic Language I	33	17	2	S	
UOA 005	حقوق الإنسان والديمقراطية	Human Rights and Democracy	33	17	2	S	
UOA 007	علوم الحاسوب 1	Computer Science I	48	27	3	S	

### Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Module Code	Module Name in Arabic	Module Name in English	SSWL	USSWL	ECTS	Type	Pre-request
ENG 004	الرياضيات 2	Calculus II	63	87	6	B	ENG 003
ENG 005	مبادئ الهندسة الكهربائية	Fundamentals of Electrical Engineering	78	72	6	C	
ENG 007	الرسم الهندسي	Engineering Drawing	93	32	5	C	
ENG 002	الكيمياء	Chemistry	78	47	5	B	
MEC 002	الميكانيك الهندسي 2 (حركي)	Engineering Mechanics-II (Dynamics)	48	52	4	C	ENG 006
MEC 003	برمجة الحاسوب	Computer Programming	48	2	2	C	

UOA 003	اللغة الانكليزية1	English Language I	33	17	2	S	
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**Semester 3 | 30 ECTS | 1 ECTS = 25 hrs**

Module Code	Module Name in Arabic	Module Name in English	SSWL	USSWL	ECTS	Type	Pre-request
ENG 08	الرياضيات3	Calculus-III	63	87	6	B	ENG 004
ENG 12	أخلاقيات ومهارات القيادة	Ethics and Leadership Skills	33	17	2	S	
MEC 04	ديناميك الحرارة1	Thermodynamics I	78	47	5	C	
MEC 05	ميكانيك الموائع1	Fluid Mechanics I	78	22	4	C	
MEC 06	مقاومة المواد1	Strength of Materials I	78	22	4	C	ENG 006
MEC 07	الرسم الميكانيكي	Mechanical drawing	78	47	5	C	ENG 007
UOA 001	اللغة العربية2	Arabic Language II	33	17	2	S	
UOA 05	جرائم حزب البعث في العراق	The Crimes of Baath Regime in Iraq	33	17	2	S	

**Semester 4 | 30 ECTS | 1 ECTS = 25 hrs**

Module Code	Module Name in Arabic	Module Name in English	SSWL	USSWL	ECTS	Type	Pre-request
ENG 009	الرياضيات4	Calculus-IV	63	87	6	B	ENG 008
MEC 008	ديناميك الحرارة2	Thermodynamics II	78	22	4	C	MEC 004
MEC 009	ميكانيك الموائع2	Fluid Mechanics II	63	37	4	C	MEC 005
MEC 010	مقاومة المواد2	Strength of Materials II	63	37	4	C	MEC 006
MEC 011	هندسة المعادن	Engineering Metallurgy	63	37	4	C	MEC 001
MEC 012	مكائن كهربائية	Electrical Machines	63	12	3	C	ENG 005
UOA 004	اللغة	English Language II	33	17	2	S	

	الانكليزية 2						
UOA 008	علوم الحاسوب 2	Computer Science II	48	27	3	S	

**Semester 5 | 30 ECTS | 1 ECTS = 25 hrs**

Module Code	Module Name in Arabic	Module Name in English	SSWL	USSWL	ECTS	Type	Pre-request
ENG 010	إحصاء هندسي	Engineering Statistics	48	52	4	B	ENG 009
MEC 013	انتقال الحرارة 1	Heat Transfer-I	78	72	6	C	MEC 008, MEC 009
MEC 014	نظرية الماكائن 1	Theory of Machines-I	78	72	6	C	MEC 002
MEC 015	تحليلات هندسية	Engineering Analysis	63	62	5	B	ENG 009
MEC 016	محركات الاحتراق الداخلي	Internal Combustion Engines	78	47	5	C	MEC 008
MEC 017	ديناميك الغازات	Gas Dynamics	63	37	4	C	MEC 008, MEC 009

**Semester 6 | 30 ECTS | 1 ECTS = 25 hrs**

Module Code	Module Name in Arabic	Module Name in English	SSWL	USSWL	ECTS	Type	Pre-request
ENG 011	الطرق العددية الهندسية	Engineering Numerical Methods	78	47	5	B	ENG 009
MEC 018	انتقال الحرارة 2	Heat Transfer-II	78	72	6	C	MEC 013
MEC 019	نظرية الماكائن 2	Theory of Machines-II	78	72	6	C	MEC 014
MEC 020	عمليات التصنيع	Manufacturing Processes	63	62	5	C	MEC 011
MEC 021	الطاقة المتجددة والمستدامة	Renewable and Sustainable energy	48	52	4	C	MEC 013
MEC 022	الهندسة الصناعية والتحليل	Industrial Engineering and Economic Analysis	63	37	4	C	ENG 009

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**Semester 7 | 30 ECTS | 1 ECTS = 25 hrs**

Module Code	Module Name in Arabic	Module Name in English	SSWL	USSWL	ECTS	Type	Pre-request
MEC 023	تصميم أجزاء المكائن 1	Design of Machine Elements-I	63	62	5	C	MEC 010
MEC 024	تكييف الهواء	Air Conditioning	78	72	6	C	MEC 018
MEC 025	الاهتزازات الميكانيكية	Mechanical Vibrations	78	47	5	C	MEC 019
MEC 026	مواد هندسية	Engineering Materials	48	77	5	C	MEC 011
MEC 01E	ديناميكا الموائع الحسابية	Computational Fluid Dynamics	78	47	5	E	MEC 008, MEC 015, ENG 011
MEC 027	مشروع تخرج 1	Final Year Project-I	78	22	4	C	

**Semester 8 | 30 ECTS | 1 ECTS = 25 hrs**

Module Code	Module Name in Arabic	Module Name in English	SSWL	USSWL	ECTS	Type	Pre-request
MEC 028	تصميم أجزاء المكائن 2	Design of Machine Elements-II	63	62	5	C	MEC 023
MEC 029	تثليج	Refrigeration	78	47	5	C	MEC 008
MCE 030	أنظمة السيطرة والقياسات	Measurement and Control Systems	93	57	6	C	MEC 019
MEC 031	محطات القدرة	Power Plants	63	87	6	C	MEC 008
MEC 02E	طريقة العناصر المحددة	Finite Element Method	48	52	4	E	MEC 010, MEC 015
MEC 032	مشروع تخرج 2	Final Year Project-II	78	22	4	C	

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